Performance Metrics Tracking

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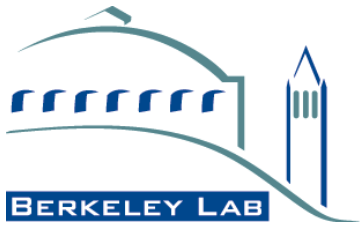

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Overview

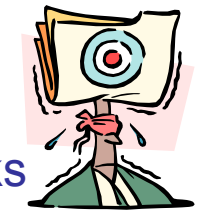
- What is Building Performance Metric Tracking?
- Performance Metrics Terminology
- Example Performance Metric Hierarchies
- Performance Metric Data Model
- Performance Model with Building Data Model
- Performance Metric Tracking Scenario
- Metracker Software Prototype
- Current Status and Next Steps

Building Performance Metric Tracking

- Pre-Design Planning
  - Identify Building Performance Objectives
  - Establish Initial Performance Metric Benchmarks
- Design
  - Elaborate Performance Metrics
  - Evaluate Design Solution Performance
  - Document As-Designed Performance Metric Benchmarks
- Commissioning
  - Evaluate Constructed Building Performance
  - Document As-Built Performance Metric Benchmarks
- Operations And Maintenance
  - Continuously Evaluate Building Performance
  - Update Performance Metric Benchmarks



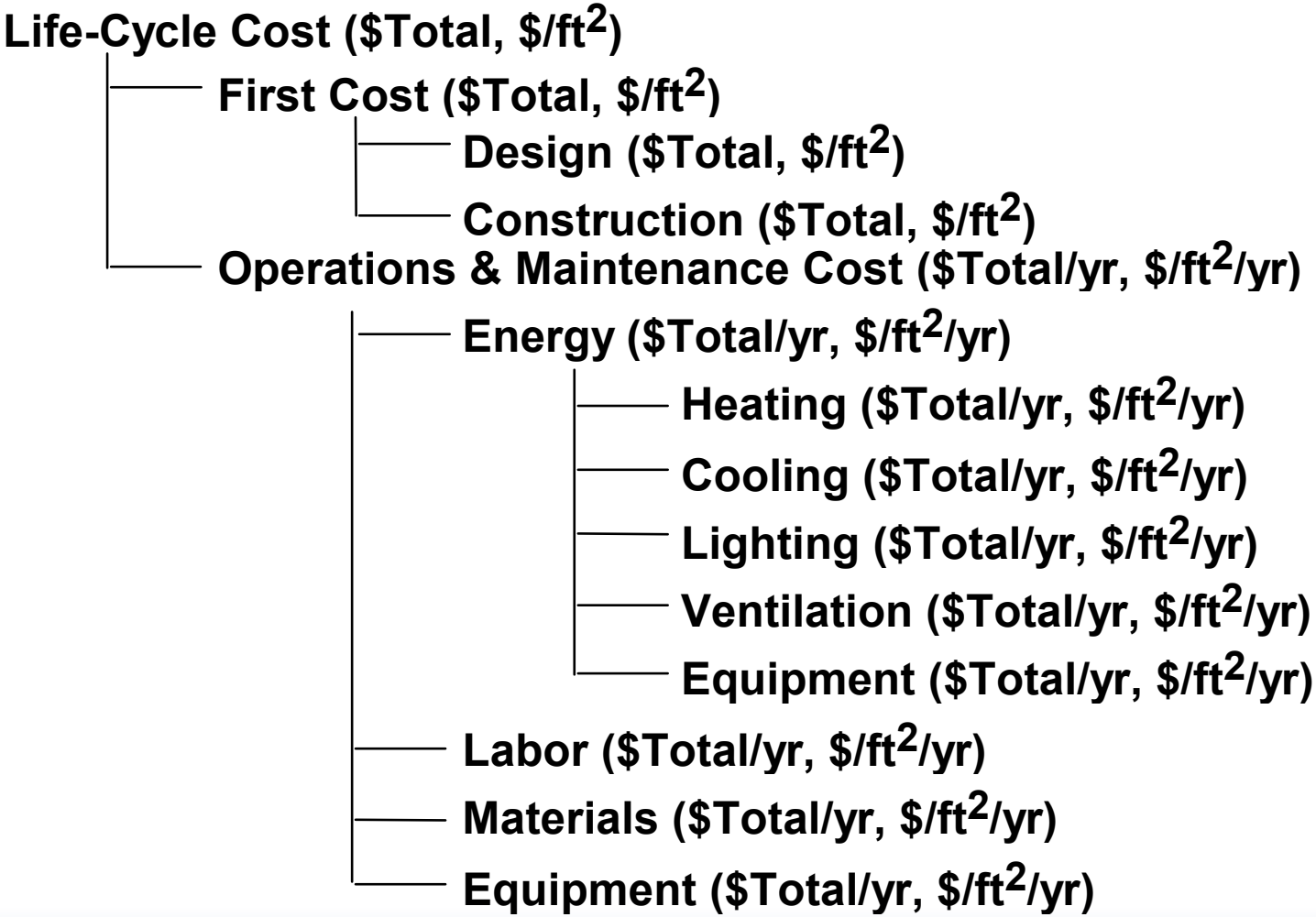





Performance Metric Terminology

- Performance Objectives
  - Qualitative statements regarding desired performance
    - energy-efficiency; environmental impact; life-cycle economics; occupant health, comfort and productivity; and building functionality, adaptability, durability, and sustainability
- Performance Metrics
  - Quantitative criteria in a structured format that provides value across the life cycle
  - Critical variables that measure or influence an objective
  - Capable of prediction or measurement at various stages of the project to evaluate the achievement of each objective
  - Both Benchmark and Assessment values defined and archived

Cost Performance Metric Branch



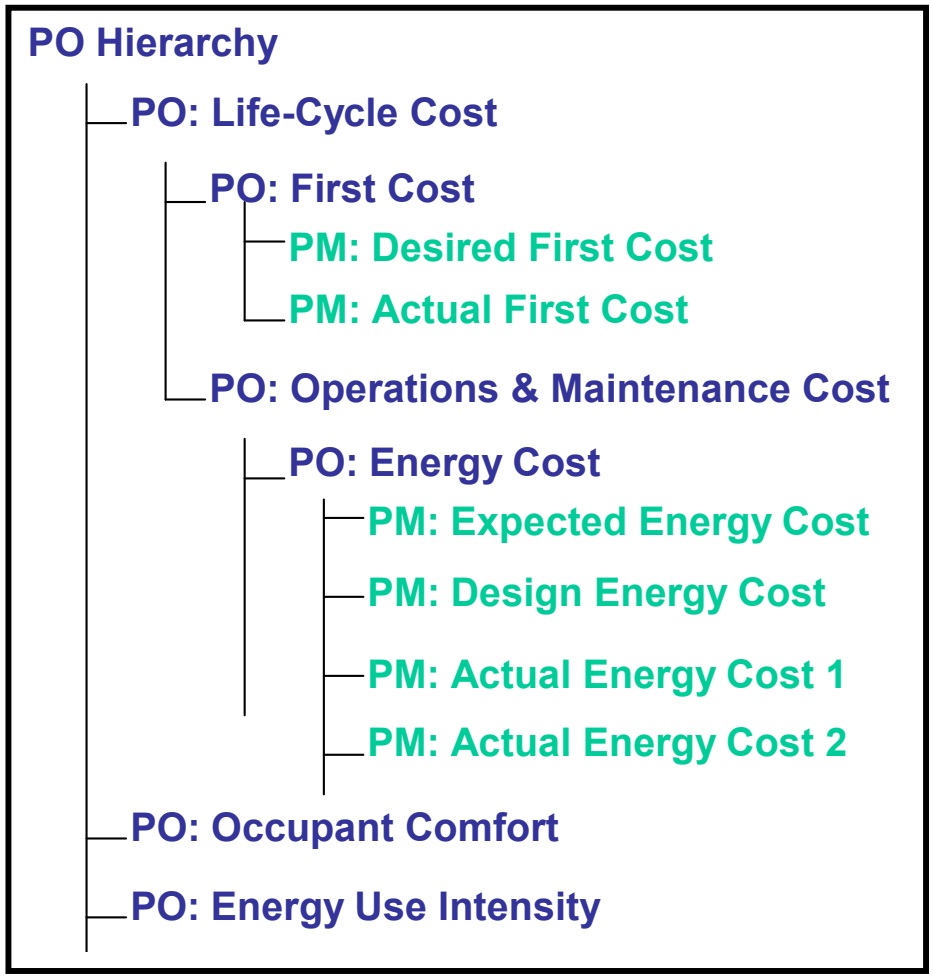
Energy and Comfort Metrics

- Energy Use Intensity (kWh/ft^2/yr)
  - Heating EUI (kWh/ft^2/yr)
  - Cooling EUI (kWh/ft^2/yr)
    - Chiller (kW/ton)
    - Cooling Tower (kW/ton)
    - Cooling Load (tons/ft^2)
  - Lighting EUI (kWh/ft^2/yr)
    - Office Lighting EUI (kWh/ft^2/yr)
      - Lighting System (W/ft^2)
      - Area (ft^2)
      - Operation (hours/yr)
    - Corridor Lighting EUI (kWh/ft^2/yr)
      - Lighting System (W/ft^2)
      - Area (ft^2)
      - Operation (hours/yr)
  - Ventilation EUI (kWh/ft^2/yr)
  - Equipment EUI (kWh/ft^2/yr)

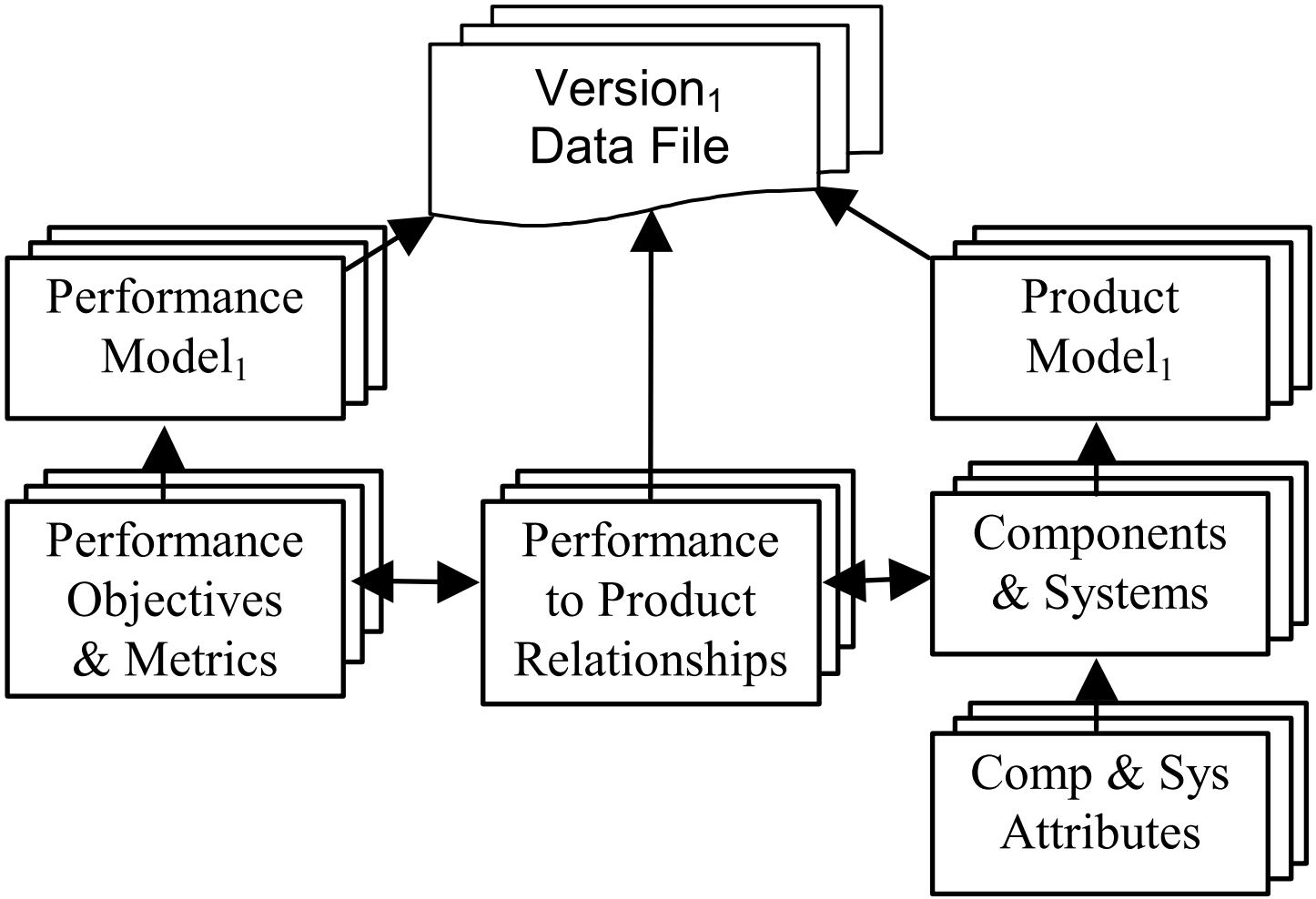
- Occupant Comfort
  - Thermal Comfort
    - Heating Min (°C)
    - Cooling Max (°C)
  - Visual Comfort
    - Illumination (lux)
    - Glare (lum-distribution)
  - Air Quality Comfort
    - Ventilation (cfm)
    - Stratification (Δ °C)

Performance Metric Data Model

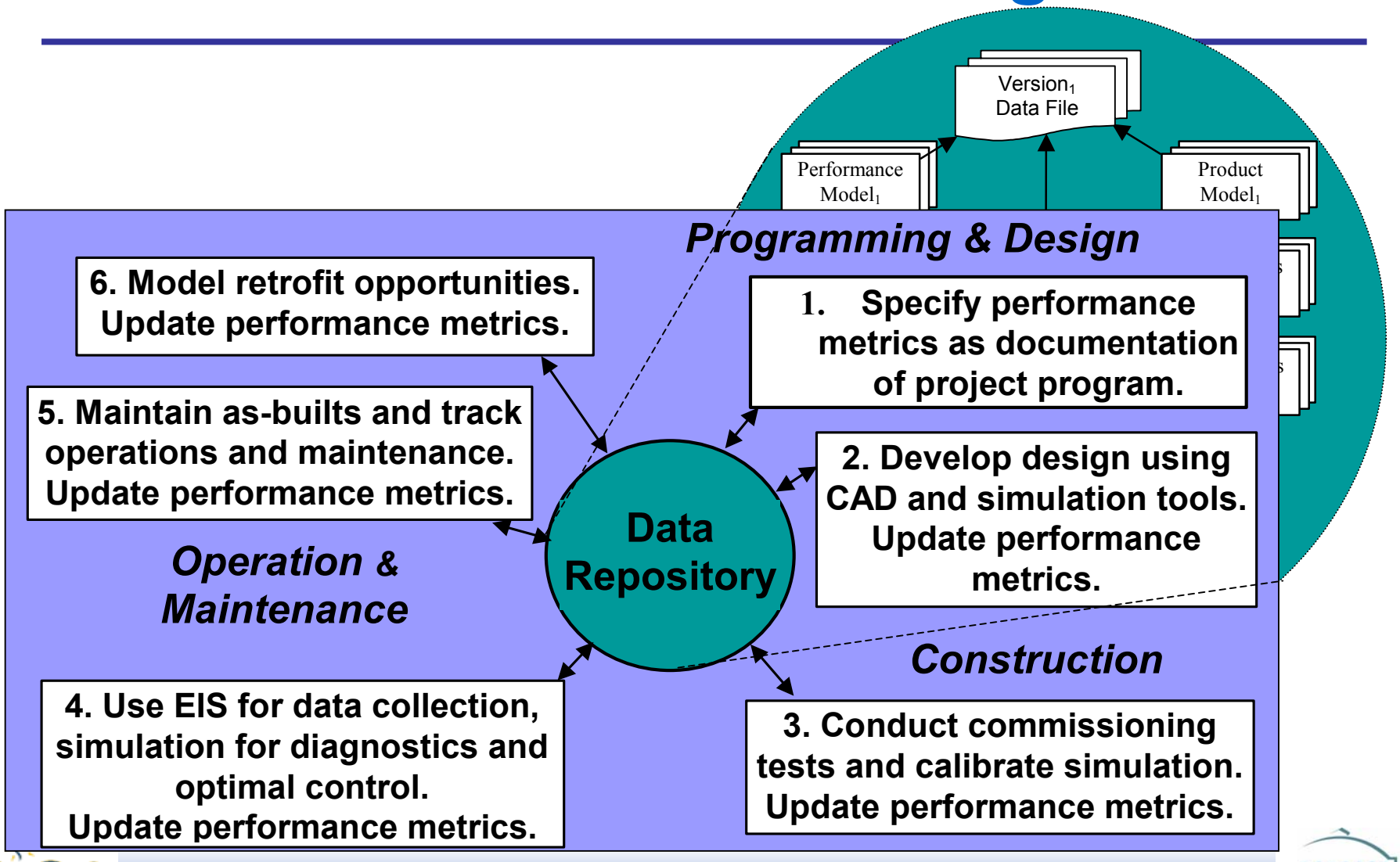
- Performance Objective
  - Name,
  - Specifier,
  - Date of Creation,
  - Description
- Performance Metric
  - Name,
  - Specifier,
  - Date of Creation,
  - Description,
  - Metric Type,
  - Data Type,
  - Source
  - Data Values



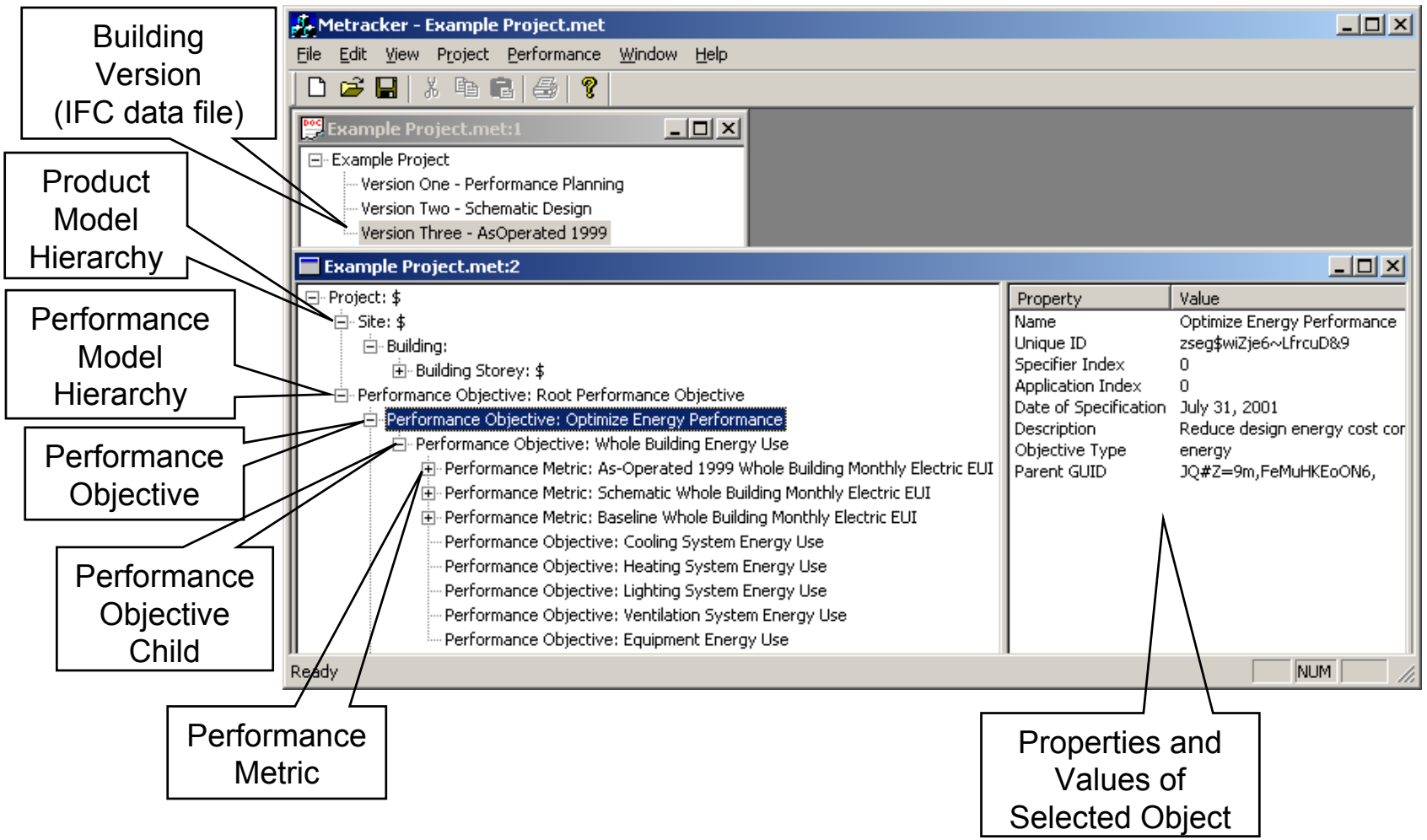
Performance Model with Building Data Model



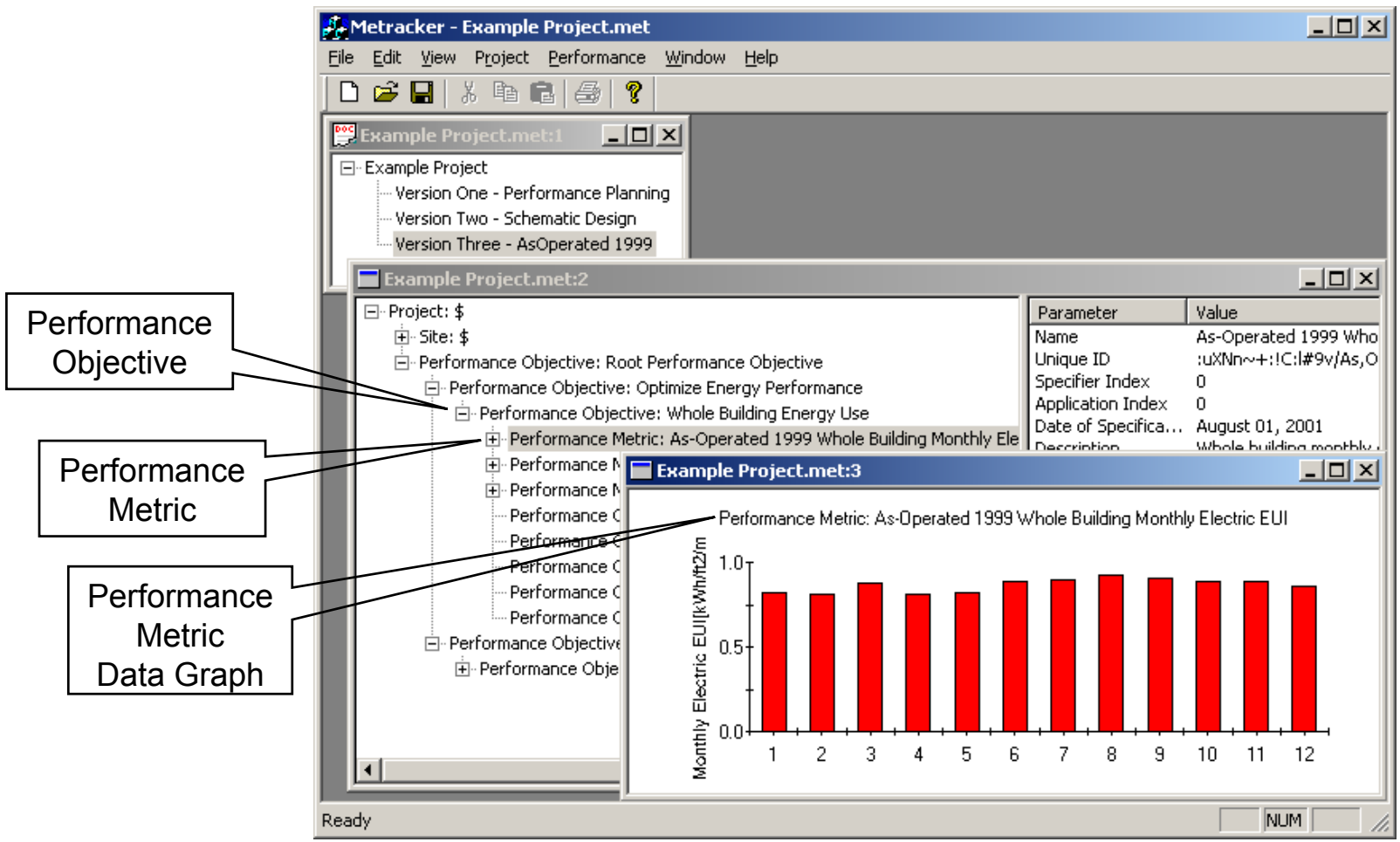
Performance Metric Tracking Scenario



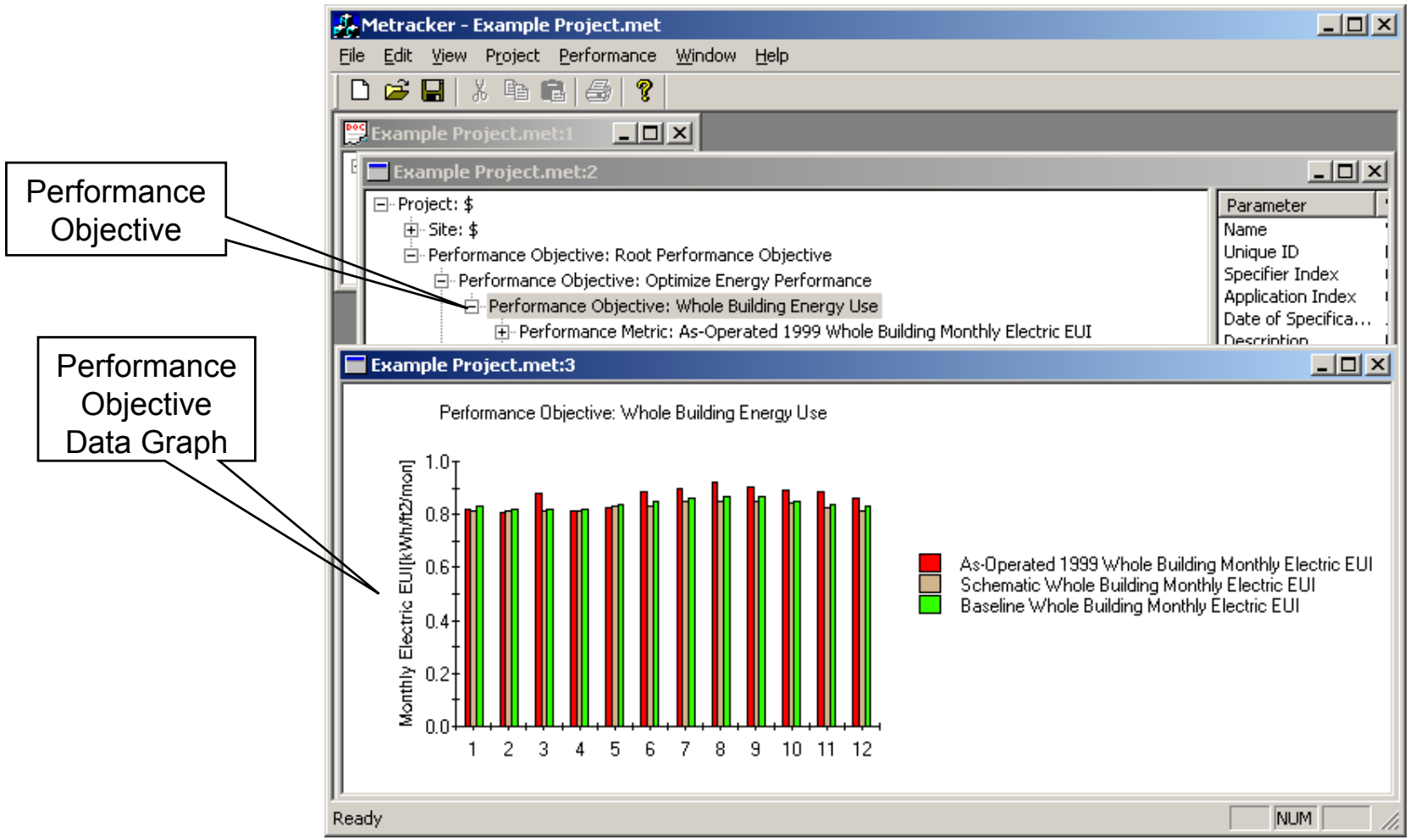
Metracker Software Prototype



Metracker Software Prototype (cont.)



Metracker Software Prototype (cont.)



Status and Next Steps

- Industry Foundation Classes (IFC) Model Complete
- Metracker Version 1.5 Beta
  - Testbed Status Only
- Next Steps
  - Standardized Performance Metrics Report
  - Rethink Software Implementation for Deployment
  - Link with Related Software (e.g., design intent documentation, simulation, EMCS)
  - Feedback from You
- **http://buildings.lbl.gov/hpcbs/Year_01/Element_2/01_E2_P2_1_2.html**